



Naval Air Station Alameda (NAS Alameda) Environmental Restoration (Installation) Award Nomination Base Realignment and Closure Program Management Office (BRAC PMO)

In 2013 and 2014, the former Naval Air Station Alameda (NAS Alameda) installation achieved significant environmental remediation progress through utilization of innovative technologies, partnering with stakeholders, and outstanding program management. This remediation protected human health and the environment by accelerating the environmental program and reducing costs through creative problem solving and utilization of innovative technologies.

The 2013/2014 former NAS Alameda environmental program successes demonstrated unequalled accomplishments at an environmental installation and directly supported key environmental and property-transfer goals consistent with the BRAC PMO mission.

INTRODUCTION

The mission of the Department of the Navy (DON) Naval Facilities Engineering Command Base Realignment and Closure Program Management Office (BRAC PMO) is to expeditiously and cost-effectively provide the services necessary to realign, close, and dispose of DON BRAC properties. These actions provide cost savings in support of DON and Department of Defense programs and serve as a catalyst to stimulate the local economies that previously hosted the military mission.

At the height of its activity, NAS Alameda consisted of approximately 2,800 acres and included a military and civilian workforce of about 18,000 personnel responsible for providing support services to naval aviation facilities. The Naval Air Rework Facility, the major industrial tenant, performed repair and revamping of propeller, turboprop, and jet aircraft. Berthing space at two piers

accommodated aircraft carriers and ship maintenance facilities at NAS Alameda.

NAS Alameda was identified for closure under BRAC in 1993 and ceased operation in April 1997; in July 1999, it was added to the United States Environmental Protection Agency's Federal Facilities National Priorities (Superfund) List.

Successful environmental restoration execution has been the key to meeting aggressive property transfer milestones which will directly stimulate local economic redevelopment. The NAS Alameda cleanup team partnered with the local community, the City of Alameda, the Department of Veterans Affairs (VA), and federal and state regulatory agencies to expedite the restoration, synergize cleanup efforts with future property development, and accelerate transfer of the property.



Figure 1. NAS Alameda Location Map

Environmental and Geographical Setting

Former NAS Alameda is located on the western side of Alameda Island, directly adjacent to the City of Alameda, and on the



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eastern side of San Francisco Bay (SF Bay) (Figure 1), just south of the City of Oakland. The property consists of approximately 2,800 acres, including 1,100 offshore acres. A majority of the land areas were created by artificial fill, mainly reclaimed bay mud from dredging of San Francisco Bay (SF Bay).

Community Setting

The adjacent City of Alameda consists of a population of approximately 74,000 with a median household income of about \$60,000. Former NAS Alameda, now referred to as Alameda Point, played a major role in the economy of Alameda and surrounding Bay Area communities. As with other Bay Area communities, the citizens of Alameda are politically and environmentally very active, and the local community is culturally diverse.

BACKGROUND

From the 1940s through the 1970s, standard activities associated with metal plating and paint striping, aircraft repair, fueling and engine testing, vehicle service stations, pest control, fire response training, and landfill disposal caused environmental contamination. Contaminants include industrial cleaning solvents, fuels, oils, metals, pesticides, polychlorinated biphenyls (PCBs), and radionuclides.

From over 50 years of operations at NAS Alameda, significant environmental contamination created a challenging cleanup program that includes 34 Installation Restoration or CERCLA sites and over 300 petroleum program sites. Petroleum sites are managed outside of the CERCLA program.

Summary of Challenges

- The former NAS Alameda property comprises 34 Installation Restoration sites and over 300 Petroleum Program sites, which include multiple contaminants affecting soil, soil vapor, and groundwater. Incorporation of property transfer goals into the already complicated task of managing numerous environmental sites creates a significantly challenging management task.
- Radiological contamination and the proximity to SF Bay, add additional levels of difficulty to the cleanup which require innovative remediation techniques and coordination with numerous regulatory agencies.
- A politically-active local community, the City of Alameda, VA, and regulatory agencies all bring their own perspectives to the program; conflict resolution and collaboration are key elements to success.

SUMMARY OF ACCOMPLISHMENTS

Technical Merit

The combination of multiple contaminants including radionuclides, proximity to SF Bay, and a location that is seismically active contributed to a technically challenging and lengthy environmental cleanup. Only through creative problem solving and utilization of innovative techniques were environmental projects completed on schedule and within budget to support the 2013 and 2014 environmental and property transfer goals.

The Waste Isolation Barrier at Site 1, a landfill located adjacent to SF Bay, is one example where innovative technologies were used to



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meet the environmental and property transfer schedules, reduce costs, and protect human health and the environment in a sustainable way. In the 2009 Record of Decision (ROD), the Navy agreed to excavate a portion of Site 1, known as the Burn Area, to protect the SF Bay from metals and radionuclide contamination. The Burn Area's close proximity to SF Bay and the seismic nature of this region left it subject to failure during a seismic event which could release burn waste and other contamination into the sensitive habitat of the SF Bay. Subsequent to the ROD, sampling of the Burn Area revealed that the extent of burn waste was much greater than expected and, in consequence, excavation would cost in excess of \$33M to perform and require several years to complete. Additionally, radiologically contaminated soil, once excavated, would need to be disposed of at a landfill in Utah (over 700 miles away).



Figure 2. Installation of the Waste Isolation Barrier at Site 1

After this information was obtained, the NAS Alameda team started an extensive search for alternate technologies and began discussions with regulatory agencies to amend the selected remedy. In FY2013, a Waste Isolation Barrier was identified and agreed upon in a ROD amendment for this area. The Waste Isolation

Barrier technology consists of containing the buried waste behind a series of interlocking sheet piles that are driven into the soil surrounding the waste, creating "isolation cells" (Figures 2 and 3). This technology was field proven in Alaska for containing buried waste adjacent to a large water body and under seismic duress, but had never been used in the State of California or by BRAC PMO. The Waste Isolation Barrier was protective of human health and the environment, cost effective, maintained the property transfer schedule, and reduced greenhouse gas emissions that would have been released into the atmosphere by excavation and truck transport of the radiologically contaminated soil.



Figure 3. Aerial View of the Waste Isolation Barrier at Site 1

Project impacts through a change in the remedial action at the Burn Area include an approximate 3-year reduction in schedule, a sustainable environmental approach that reduced greenhouse gas emissions by 9,540 metric tons (approximately 21 million pounds), and over \$25M in cost savings. These impacts were achieved while maintaining the property transfer schedule and protection of the environment.



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Stakeholder Interaction

The environmental program at NAS Alameda could only be successful through close partnering with the local community, regulatory agencies, and future property transferees. To do this, the NAS Alameda team holds monthly meetings, at a minimum, with these groups. These meetings facilitate communication of the DON's remediation progress, obtain feedback and property reuse preferences, and synergistically incorporate future redevelopment plans with long-term stewardship of the environment into the Navy's restoration program.

An example of this partnering was evident in the 2014 property transfer of 624 acres to the VA and long-term protection of the endangered California Least Tern (CLT) colony located on this property. The VA was interested in obtaining 549 acres at NAS Alameda for a clinic and National Cemetery Administration (NCA) cemetery to serve local veterans. The VA project would also provide much needed jobs to the local Alameda economy and help kick-start redevelopment on the former installation.

Early discussions with stakeholders on this project identified many issues including:

- The US Department of Fish and Wildlife Service (USF&W) believed the planned VA development would negatively impact the CLT colony and that an additional buffer zone was needed between the development and the colony.
- The City of Alameda identified that planned utility upgrades (electrical, sewer, natural gas, etc.) for the western half of Alameda Point should be up-sized to

accommodate the future VA and City of Alameda redevelopment efforts.

- The local community wanted limited access to portions of the planned transfer parcel which included wetlands; this area is of special interest to the community due to the amazing views and ecologically diverse wetlands

The 2014 program goal of property transfer was dependent on overcoming these issues; a task that required early and diligent collaboration with stakeholders and creative solutions to overcome competing priorities.



Figure 4. Wetlands Area to be Included in the East Bay Trails System

The NAS Alameda team collaborated with the USF&W, local community, City of Alameda, East Bay Regional Park District, and VA to negotiate a plan that would meet the needs of all parties. Under this plan, the City of Alameda relinquished their request to 74 acres of NAS Alameda property that were earmarked for them. The 74 acres were then transferred from the Navy to support the VA project (increasing the VA parcel to 624 acres). This additional acreage allowed for a larger buffer zone between the planned VA development and the CLT colony. The East Bay Regional Park District was coordinated



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with to discuss expanding the East Bay Regional (walking) Trail onto the southwest corner of the VA parcel, allowing for limited public access (Figure 4). In return, the VA agreed to change their development location and layout, allow trail access to the southeast portion of the property, and provide utility upgrades. In all, approximately 511 of the 624 acres will remain undeveloped to protect the breeding habitat of the endangered CLT (Figure 5).

The VA property transfer of 624 acres was a major 2014 goal for the DON BRAC PMO. In addition to achieving Navy priorities through stakeholder coordination, this transfer allows for:

- a world class medical clinic for our nation's veterans,
- 512 acres that are well managed and protected in perpetuity for the persistence of the endangered CLT,
- a much needed national cemetery to serve as final resting place for our veterans, and
- a future walking trail for citizens to enjoy nature and the beautiful landscape.



Figure 5. The endangered CLT uses the former NAS Alameda to raise their young

This accomplishment could only have been realized through thoughtful and diligent collaboration with regulatory agencies, federal agencies, local government, and the Alameda community.

Program Management

A key aspect of the Alameda Team's successes in 2013/2014 included outstanding management of the environmental program. The Navy closely tracks cleanup progress, schedule, and program milestones through the Site Management Plan (SMP), which is issued in hardcopy annually, reviewed monthly, and updated as required. Regulatory agencies and community stakeholders provide input to this plan, facilitating early and frequent communication between these stakeholders.

The BRAC mission of property transfer was realized in 2013/2014 through exceptional environmental program management that promoted completion of environmental restoration in a protective, cost-effective, and timely manner. Navy and regulatory agencies collaborated exceptionally well during this period to complete the restoration and create a synergistic relationship between Navy cleanup and future development plans.

In FY13 and FY14, all program milestones for transfer were met, which included unprecedented completion of environmental restoration. Restoration progress was documented through the finalization of numerous environmental documents which included:

- Finding of Suitability of Transfer for the City of Alameda parcel,
- Environmental Summary Document Supplement for VA Transfer



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- Environmental Assessment for the VA development,
- Record of Decision documents for Installation Restoration Sites 5, 9, 10, 12, 13, 19, 22, 23, and 25
- Proposed Plans for Installation Restoration Sites 3, 4, 5, 10, 11, 12, 21, 25, 30, and 31,
- Site Investigation reports for Parcels EDC-12 and EDC-17,
- ROD Amendment for Installation Restoration Site 1,
- Closure reports for 60 petroleum sites, and,
- Remedial Action Completion Reports for Installation Restoration Sites 7 and 34.

These documents and the associated environmental restoration progress illustrate program management at the highest level. The environmental successes of the NAS Alameda team allowed the property transfer of 1,704 acres to the City of Alameda in 2013 and 624 acres to the VA in 2014, both milestones for BRAC PMO and the DON; these transfers represent over 80% of the original 2,800 acres at NAS Alameda.

Transferability and Sharing Lessons Learned

Lessons learned and sharing of information gained during environmental restoration is a vital and valuable step to organizational success. Regular communication within BRAC PMO, the DON, and the environmental community help to develop environmental knowledge and reap immeasurable benefits to our short-term successes and long-term knowledge.

Information is shared informally on a day-to-day basis and more formally through monthly BRAC newsletters, public meetings, publishing final reports, and presentations at environmental conferences.

In 2013, a report on in situ thermal treatment of chlorinated compounds was published by the NAS Alameda team that documented key lessons learned from a treatability study conducted at Site 11. The lessons learned were used to advance, not only the NAS Alameda environmental program, but the science and environmental knowledge of this technology.

The Site 11 treatability study focused on treatment of chlorinated volatile organic compounds (CVOCs) in groundwater by heating the groundwater in situ to temperatures above the CVOC boiling points using a technology called “six-phase heating”. CVOCs would then boil and could be extracted as vapor (Figure 6).



Figure 6. Installation of electrodes to remediate Site 11 groundwater



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CVOC concentrations at Site 11 were very high and indicated pools of contamination in groundwater were present, which would be difficult to treat under normal circumstances. Due to Site 11's close proximity to SF Bay, the groundwater is fairly saline and added an untested complication to an already complex problem, as high salinity was expected to reduce six-phase heating effectiveness.

The Site 11 treatability study was ultimately successful in treatment of CVOC contamination, removing approximately 88% of the contamination in the treatment area. However, operation of the treatment system took longer than anticipated, did not completely remove all contamination, and had reached the technology's limits in the highly saline groundwater at Site 11.

As most Navy bases are located adjacent to saltwater oceans or bays, the limits of six-phase heating in saline groundwater are vital information when evaluating and comparing which technology to use for groundwater treatment. The lessons learned from the Site 11 treatability study have already benefitted other BRAC bases and will continue to help the environmental community make informed decisions for in situ treatment of groundwater.

Outcomes and Planning for Long Term Success

The NAS Alameda environmental program made unparalleled restoration progress during 2013 and 2014. These accomplishments could not have been achieved without diligent program management, utilization of innovative technologies, and good communication with stakeholders.

Major accomplishments for 2013 and 2014 include:

- Excellent program management attained unprecedented progress in the environmental restoration program, supporting transfer of over 80% of the original installation. Transfer of 1,704 acres to the City of Alameda in 2013 and 624 acres of property to the Department of Veterans Affairs in 2014 were landmark programmatic goals for the BRAC PMO mission.
- Utilization of innovative technologies reduced program costs, accelerated the restoration schedule, and decreased negative impacts of remediation on the environment. At the Site 1 Burn Area, costs were reduced by \$25 million, 3-years were saved on the remediation schedule, and greenhouse gas emissions during restoration were decreased by over 9,540 metric tons.
- The trust and good will established with stakeholders in 2013 and 2014 are a bridge to future communications, helping the NAS Alameda team work through upcoming challenges; this stakeholder collaboration provides a blue print for success at other installations.

Program management techniques and tools were critical to restoration progress and will be used to achieve goals established for 2015 and beyond: including finalization of the last CERCLA ROD for NAS Alameda in 2016 and initiation of cleanup at the installation's last Installation Restoration Site in 2017. These are lofty goals that set the stage for completion of the BRAC PMO mission at NAS Alameda, to expeditiously and cost-effectively provide the services necessary to realign, close, and dispose of DON BRAC properties.